

PATENT COOPERATION TREATY
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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)
(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference P20027PC00 fjp/tk	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/AU2004/001489	International filing date (day/month/year) 28 October 2004	Priority date (day/month/year) 31 October 2003
International Patent Classification (IPC) or national classification and IPC Int. Cl. ⁷ H01J 37/32, 37/317, 37/09, 37/20, 37/30, C23C 14/48, 14/50, 14/20, C08J 3/28, A61M 1/10, 1/12		
Applicant VENTRACOR LIMITED et al		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 3 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
a. <input checked="" type="checkbox"/> (<i>sent to the applicant and to the International Bureau</i>) a total of 3 sheets, as follows:
<input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
<input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or table related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).
4. This report contains indications relating to the following items:
<input checked="" type="checkbox"/> Box No. I Basis of the report
<input type="checkbox"/> Box No. II Priority
<input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input type="checkbox"/> Box No. IV Lack of unity of invention
<input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input type="checkbox"/> Box No. VI Certain documents cited
<input type="checkbox"/> Box No. VII Certain defects in the international application
<input type="checkbox"/> Box No. VIII Certain observations on the international application

Date of submission of the demand 31 August 2005	Date of completion of the report 25 November 2005
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer STEPHEN CLARK Telephone No. (02) 6283 2781

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/AU2004/001489

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- This report is based on translations from the original language into the following language which is the language of a translation furnished for the purposes of:
- international search (under Rules 12.3 and 23.1 (b))
 - publication of the international application (under Rule 12.4)
 - international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):
- the international application as originally filed/furnished
- the description:
 pages 1, 3-7 as originally filed/furnished
 pages* 2 received by this Authority on 10 October 2005 with the letter of 10 October 2005
 pages* received by this Authority on with the letter of
- the claims:
 pages as originally filed/furnished
 pages* as amended (together with any statement) under Article 19
 pages* 8, 9 received by this Authority on 10 October 2005 with the letter of 10 October 2005
 pages* received by this Authority on with the letter of
- the drawings:
 pages 1-5 as originally filed/furnished
 pages* received by this Authority on with the letter of
 pages* received by this Authority on with the letter of
- a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.
3. The amendments have resulted in the cancellation of:
- the description, pages
 - the claims, Nos.
 - the drawings, sheets/figs
 - the sequence listing (*specify*):
 - any table(s) related to the sequence listing (*specify*):
4. This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- the description, pages
 - the claims, Nos.
 - the drawings, sheets/figs
 - the sequence listing (*specify*):
 - any table(s) related to the sequence listing (*specify*):

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/AU2004/001489

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims 1-14	YES
	Claims	NO
Inventive step (IS)	Claims 1-14	YES
	Claims	NO
Industrial applicability (IA)	Claims 1-14	YES
	Claims	NO

2. Citations and explanations (Rule 70.7)

1. US 6504307
2. US 6335268
3. US 4863576

Novelty (N), Inventive Step (IS) Claims 1-14

None of the citations alone, or in obvious combination, disclose all of the features of any of the claims.

In particular, the feature of oscillating and/or rotating the support to evenly expose the object to bombardment and avoid the object contacting the mesh was not found.

Citation 1 was the closest art and discloses a mesh surrounding a 3D object which has its surface modified by ion bombardment. The mesh is non-conformal, the objects to be modified are in the biomedical field (including artificial joints) and the positioning of the target is important to avoid arcing burn and to give a uniform bombardment.

components are allowed to contact the biased conductive mesh and this may result in increasing the temperature exposure of the components or scorch the surface of the components.

It is an object of the present invention to address or ameliorate one or more of the
5 abovementioned disadvantages.

Summary of Invention

In accordance with a first aspect the present invention consists in a plasma processor for modifying at least a region of a surface of a component; wherein said component is bombarded by ions from a gas plasma environment; said ions are drawn towards said

10 component by a voltage source applied to a first mesh, wherein said first mesh is a stationary non-conformal conductive mesh; and wherein the processor further comprises a support for supporting the component, and the support is adapted to oscillate and/or rotate such that the component is moved in the vicinity of the first mesh to evenly expose it to ion bombardment without the component contacting the first mesh.

15 Preferably said first mesh substantially encapsulates said component.

Preferably said component is encapsulated by a movable second mesh that is a non-conformal non-conductive mesh encapsulated within the first mesh.

Preferably said voltage source provides a pulsed voltage.

Preferably said component is non-conducting.

20 Preferably said component is a polymeric component.

Preferably said component is part of a blood pump.

In accordance with a second aspect the present invention consists in a method for modifying a surface of a component by bombarding said component with ions from a gas plasma environment; said ions are drawn towards said component by a voltage source applied to a first mesh that is stationary non-conformal and conductive, wherein said

25 component is mounted on an oscillating and/or rotating support and is moved in the vicinity of said first mesh to evenly expose it to ion bombardment.